FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

6 to 12 April, 2014 (Week 15)

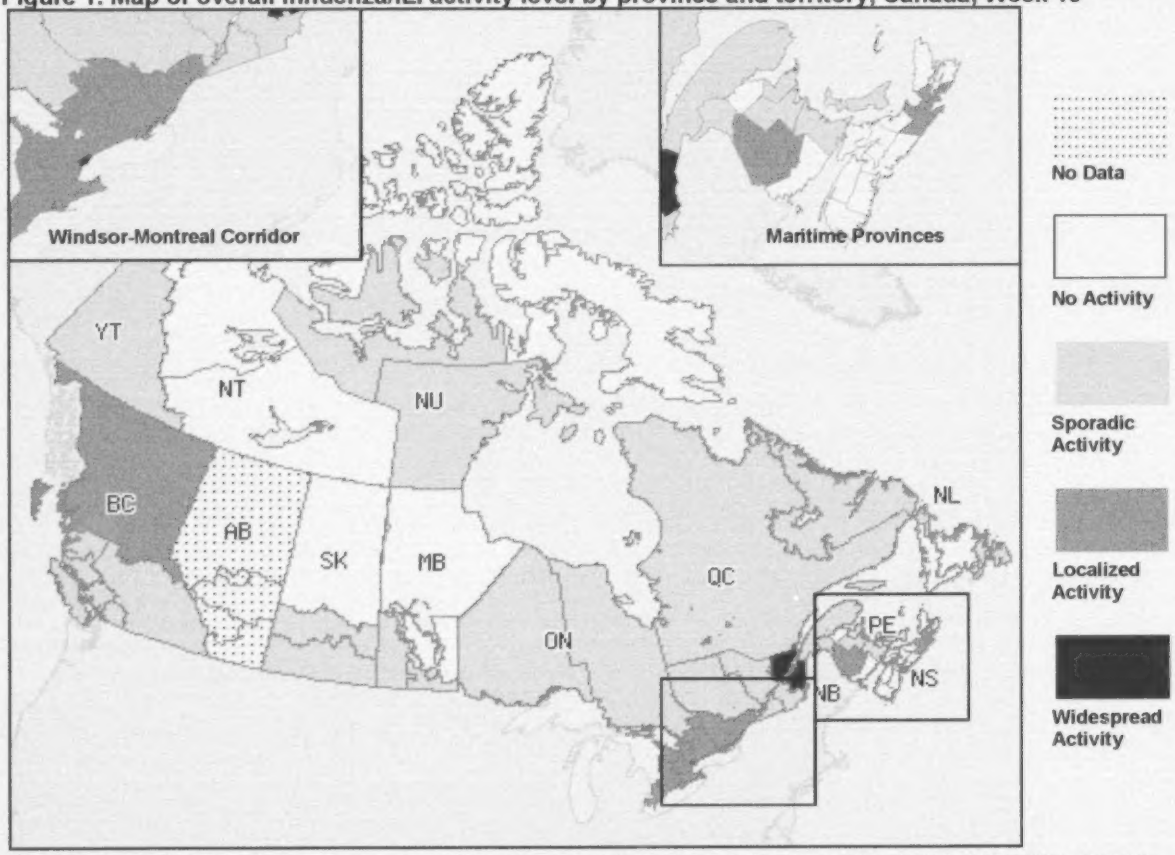
Overall Summary

- In week 15, influenza activity in Canada was sustained by continued circulation of influenza B. Ontario reported a marked increase in influenza activity and some western provinces have also reported increases in detections of influenza B.
- While the influenza A(H1N1) virus has mostly affected adults 20-64 years of age this season, influenza B is having a greater impact on adults 65 years of age and older, as well as young persons 5 to 19 years of age.
- As of week 15, 4,070 hospitalizations and 226 deaths have been reported from participating regions, which is comparable to reports in past influenza seasons.
- Influenza activity remains within expected levels for this time of year.

Influenza/ILI Activity (geographic spread)

The number of regions reporting localized or widespread influenza activity has been stable for the past seven weeks. In week 15, two regions (ON(1) and QC(1)) reported widespread activity and seven regions (BC(1), ON(4), NS(1) and NB(1)) reported localized activity. Data was not reported for five regions in week 15 (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 15

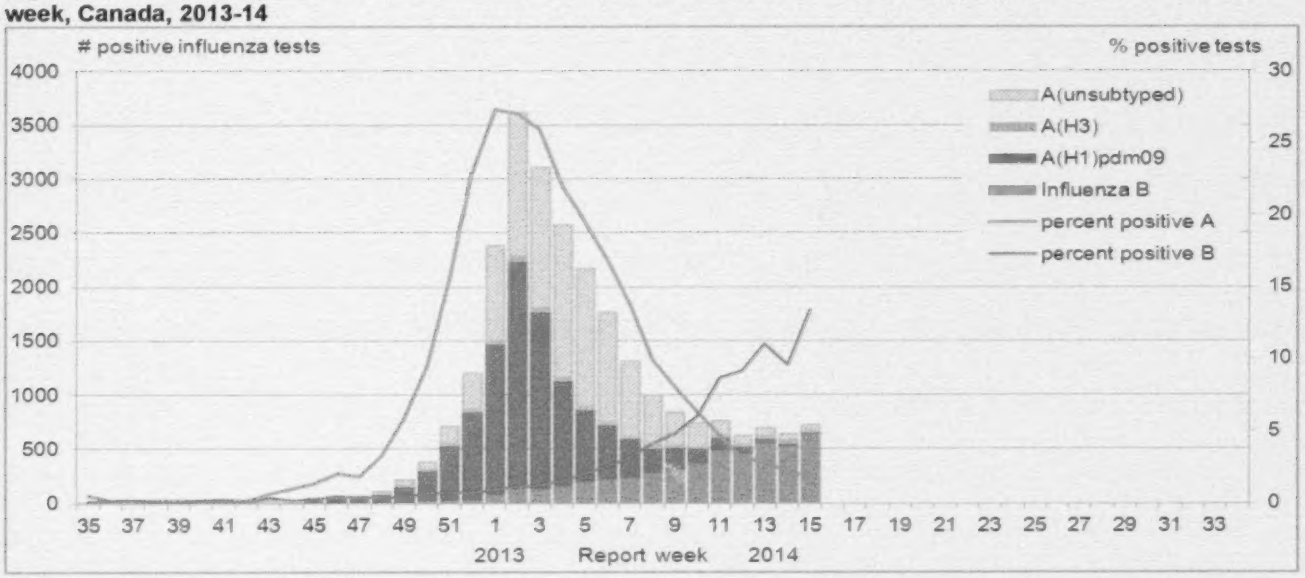


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests increased from 638 in week 14 to 722 (15.3% of tests) in week 15, revealing that influenza B circulation has not yet reached its peak in Canada. Influenza B remained the predominant virus in week 15, representing 88% of influenza detections (Figure 2). Influenza B detections are declining in Newfoundland & Labrador and Quebec, but are increasing sharply in Ontario. British Columbia, Alberta and Saskatchewan have also reported increases in influenza B detections in recent weeks (Table 1). Significantly greater proportions of influenza B cases have been ≥65 years of age and 5-19 years of age compared to cases of A(H1N1)pdm09. Among cases for which information on age and type/subtype has been received, 42.8% of the cases in week 15 were ≥65 years of age compared to 19.2% of cases for the season to date (Table 2).

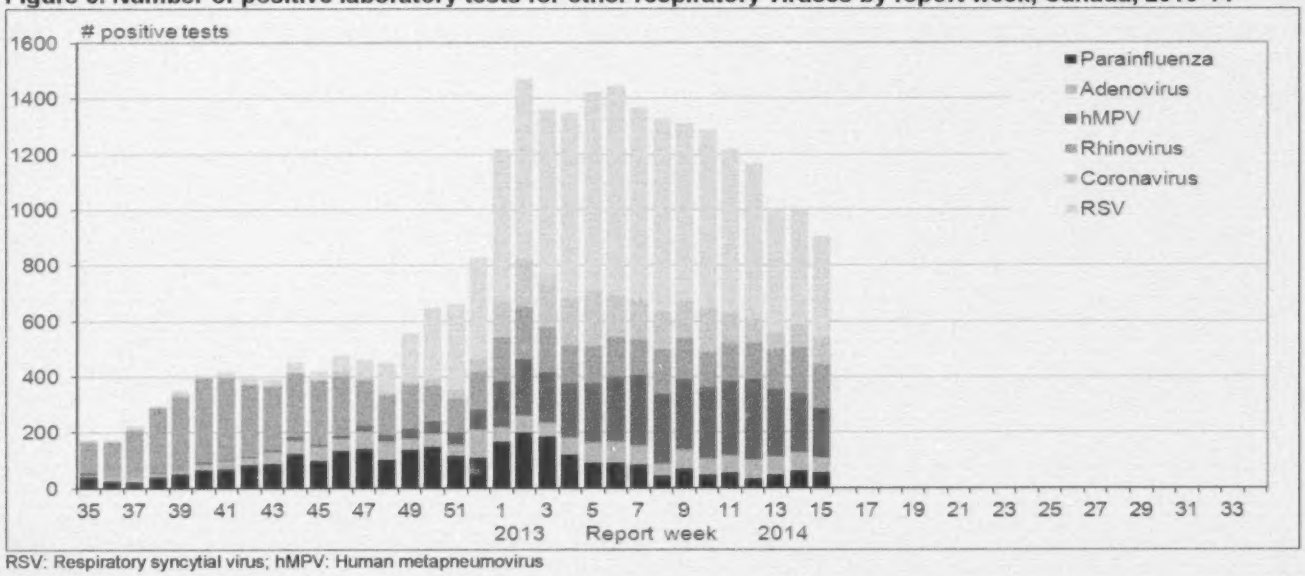
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV continued to decline from a peak in early February. The number of positive tests for parainfluenza and adenovirus have been variable in recent weeks. Detections of coronavirus had been on a downward trend, but have increased over the past two weeks. More detections human metapneumovirus have been reported compared to the same period last season, but they have declined sharply over the past three weeks. Detections of rhinovirus have been relatively stable during the winter months, although these detections represent an increasing percentage of tests positive since early January (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (April 6 to 12, 2014)					Cumulative (August 25, 2013 to April 12, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	7	0	7	0	36	1787	1612	51	124	261
AB	9	3	1	5	42	3819	3446	59	314	269
SK	14	7	0	7	24	1376	985	7	384	81
MB	5	2	0	3	1	654	460	3	191	20
ON	35	8	13	14	389	5675	2476	334	2865	1847
QC	15	1	1	13	116	5324	677	4	4643	2284
NB	0	0	0	0	10	1488	370	1	1117	55
NS	2	0	0	2	1	172	134	4	34	5
PE	0	0	0	0	1	118	117	0	1	2
NL	2	0	0	2	13	362	104	0	258	203
Canada	**89**	**21**	**22**	**46**	**633**	**20775**	**10381**	**463**	**9931**	**5027**
Percentage[2]	12.3%	23.6%	24.7%	51.7%	87.7%	80.5%	50.0%	2.2%	47.8%	19.5%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

Age groups (years)	Weekly (April 6 to 12, 2014)					Cumulative (August 25, 2013 to April 12, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	6	0	0	6	21	3242	1442	38	1762	410	3652	17.4%
5-19	3	1	0	2	30	1316	705	19	592	620	1936	9.2%
20-44	7	1	0	6	43	5055	2802	40	2213	726	5781	27.5%
45-64	12	0	0	12	68	4432	2382	56	1994	1025	5457	26.0%
65+	11	1	6	4	132	2505	995	138	1372	1517	4022	19.2%
Unknown	1	0	1	0	0	136	102	21	13	5	141	0.7%
Total	40	3	7	30	294	16686	8428	312	7946	4303	20989	100.0%
Percentage[2]	12.0%	7.5%	17.5%	75.0%	88.0%	79.5%	50.5%	1.9%	47.6%	20.5%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, to week 14, the National Microbiology Laboratory (NML) has antigenically characterized 1,740 influenza viruses [86 A(H3N2), 1,301 A(H1N1)pdm09 and 353 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Nineteen influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

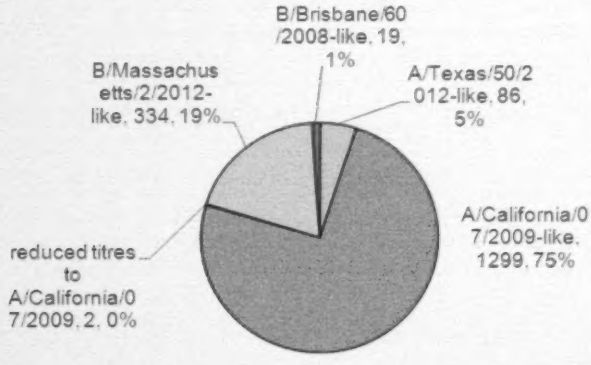


Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1,740

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, to week 14, NML has tested 1,368 influenza viruses for resistance to oseltamivir and all but two were sensitive. All 1,370 viruses tested for resistance to zanamivir were sensitive. All 1,454 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

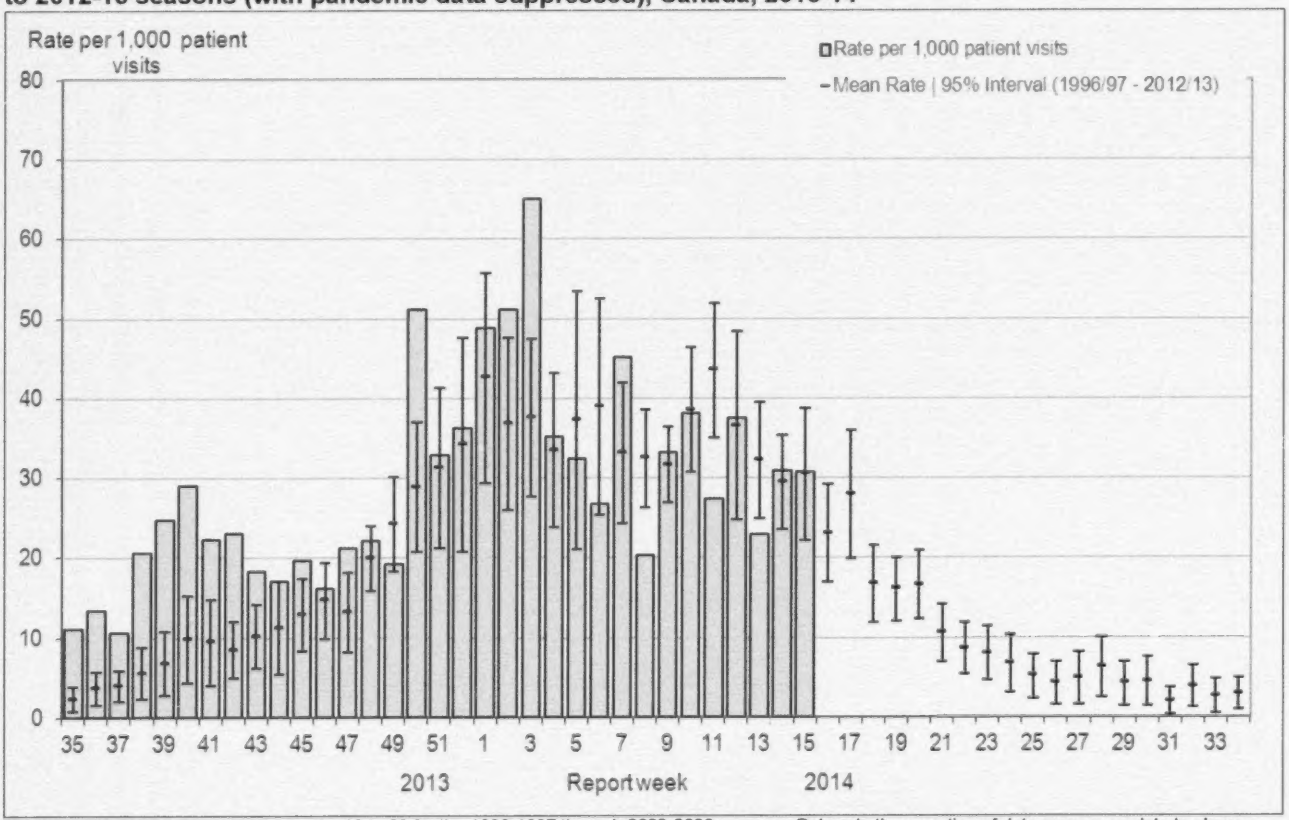
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	66	0	66	0	114	114 (100%)
A (H1N1)	1105	2 (0.2%)	1108	0	1340	1340 (100%)
B	197	0	196	0	NA[1]	NA[1]
TOTAL	1368	2 (0.1%)	1370	0	1454	1454 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate was similar to the previous week at 30.7 consultations per 1,000 patient visits in week 15; which was within the expected range for week 15 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

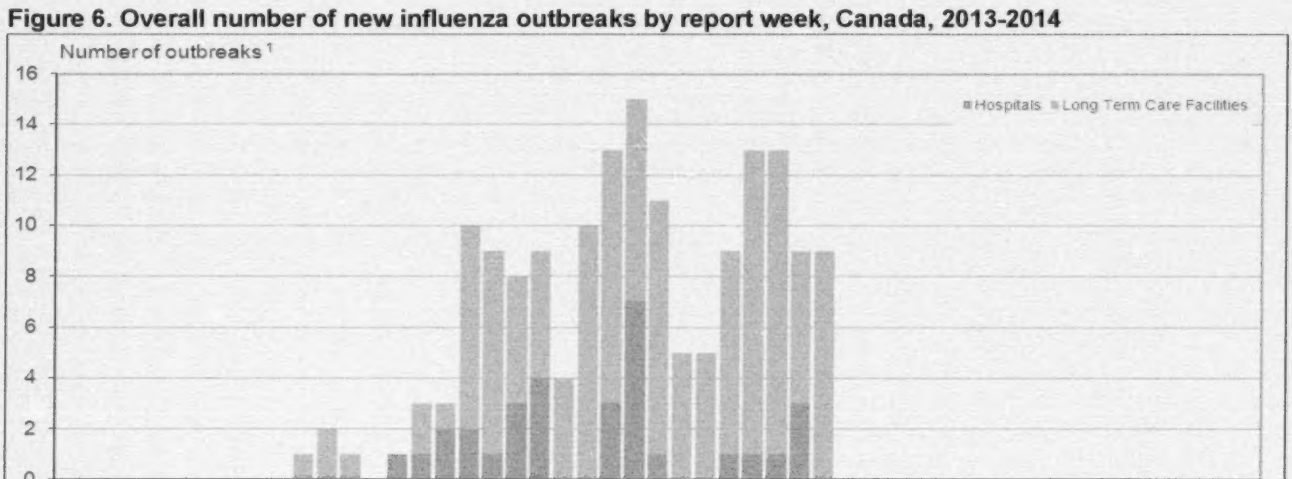


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 15, nine new influenza outbreaks were reported in long-term care facilities (Figure 6). In addition, two outbreaks were reported in other settings or communities. Among the 11 influenza outbreaks, nine had data on the influenza type, and seven of these were influenza B. One additional outbreak of influenza-like illness was reported in a school in week 15.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

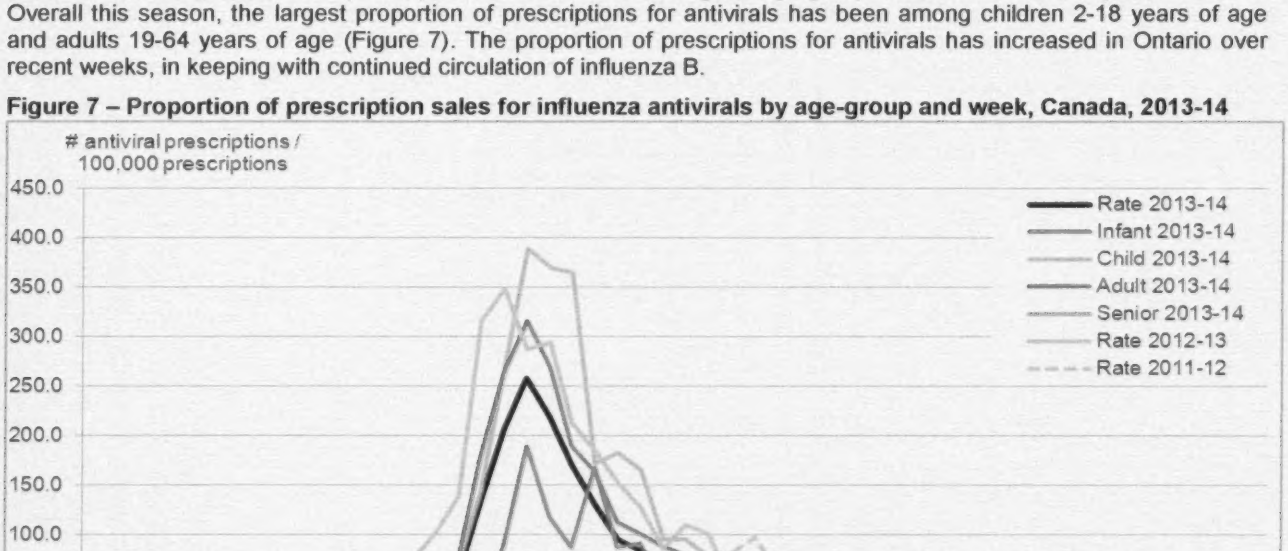


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 15, the proportion of prescriptions for antivirals among all age-groups was similar to the previous week. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age (Figure 7). The proportion of prescriptions for antivirals has increased in Ontario over recent weeks, in keeping with continued circulation of influenza B.

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 15, 12 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 11 in week 14. Influenza B was reported in 10 of the 12 cases in week 15 (Figure 8a). A greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. Two ICU admissions were reported in week 15: one child 6-23 months of age with A(H1N1)pdm09, and one 5-9 years of age with influenza B. No deaths were reported in week 15.

To date this season, a total of 663 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 84% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 74% of cases to date (Table 4). Ninety-seven ICU admissions have been reported, of which 66 (68%) were children <5 years of age (Figure 9a). All but six were cases with influenza A, and 97% of those subtyped were A(H1N1)pdm09. Among the 94 ICU cases with available data, 60 (64%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 15, 29 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 44 in week 14 (Figure 8b). This season, a significantly greater proportion of cases of influenza B have been ≥65 years of age compared to cases of A(H1N1)pdm09. For a sixth consecutive week, the majority of hospitalizations were associated with influenza B, with a greater proportion of cases among adults ≥65 years of age. Two ICU admissions were reported in week 15: one adult 20-44 years of age, and one ≥65 years of age, both with influenza B. No deaths were reported in week 15.

To date this season, 1,575 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1,233 (78.3%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). Overall, fewer cases have been reported this season compared to the 2012-13 season, however, nearly four times more cases of influenza B have been reported compared to last year. ICU admission was required for 252 hospitalizations, all but 21 of which were cases with influenza A (122 A(H1N1)pdm09, eight A(H3N2) and 101 A(unsubtyped)). Approximately 80% of hospitalizations and ICU admissions were ≥45 years of age. Of the 186 ICU admissions with available information, 160 (86.0%) were reported to have at least one comorbidity and of the 210 ICU admissions with available information 148 (70.5%) reported not having been vaccinated this season. Seventy-two deaths have been reported, all but nine with influenza A (35 A(H1N1)pdm09, three A(H3N2) and 25 A(unsubtyped)); seven cases 20-44 years of age, 30 cases 45-64 years of age and 35 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

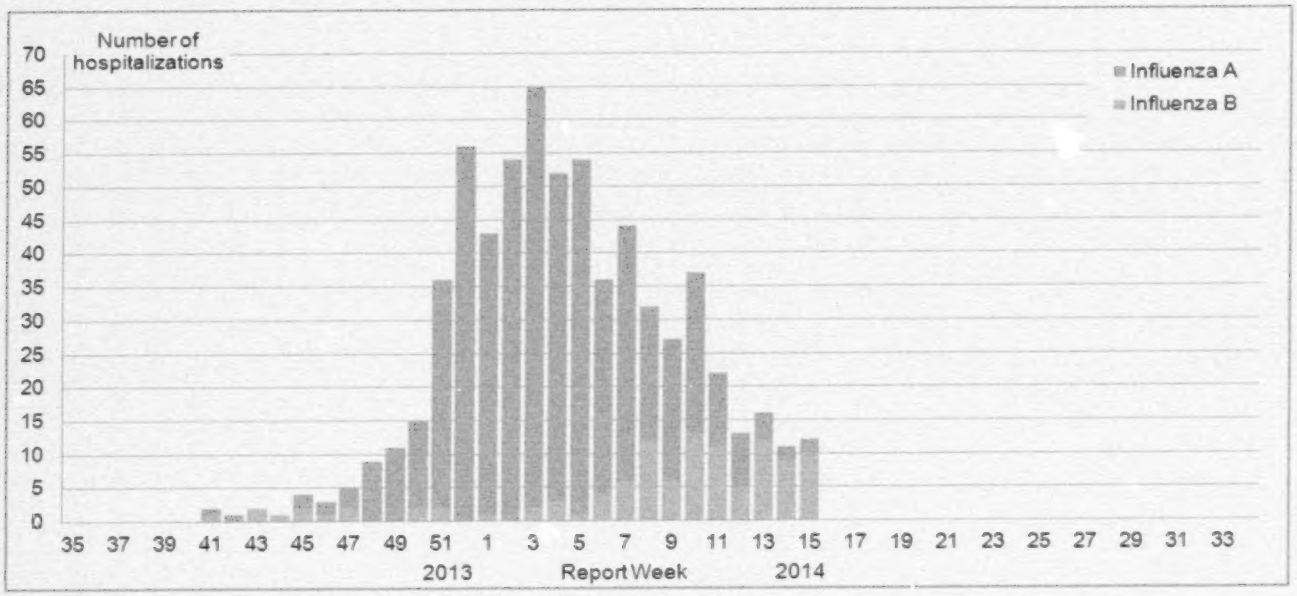
Age groups	Cumulative (25 Aug. 2013 to 12 Apr. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	104	34	0	70	5	109 (16%)
6-23m	162	51	1	110	18	180 (27%)
2-4y	166	55	3	108	35	201 (30%)
5-9y	83	27	0	56	40	123 (19%)
10-16y	40	14	1	25	10	50 (8%)
Total	555	181	5	369	108	663
% [1]	83.7%	32.6%	0.9%	66.5%	16.3%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

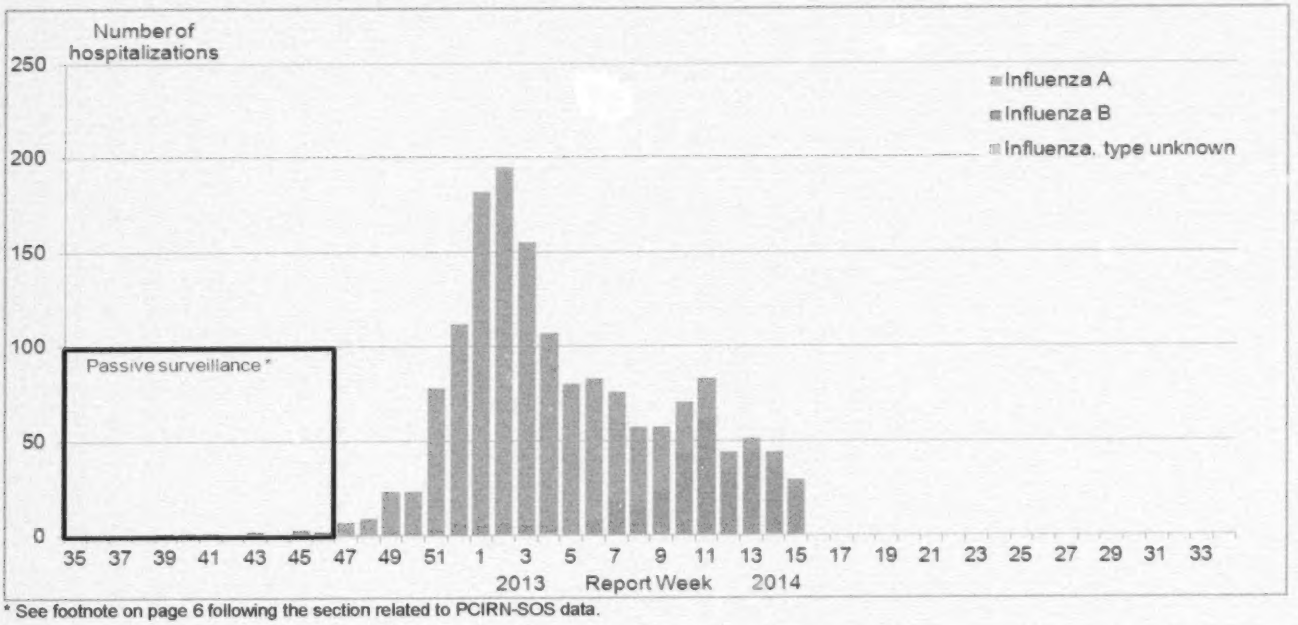
Age groups (years)	Cumulative (25 Aug. 2013 to 12 Apr. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	5	0	8	2	15 (1%)
20-44	260	134	6	120	24	284 (18%)
45-64	483	225	9	249	79	562 (36%)
65+	472	217	46	209	235	707 (45%)
Total	1228	581	61	586	340	1568
% [1]	78%	47%	5%	48%	22%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Two cases for which the influenza type has not yet been reported, and five cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



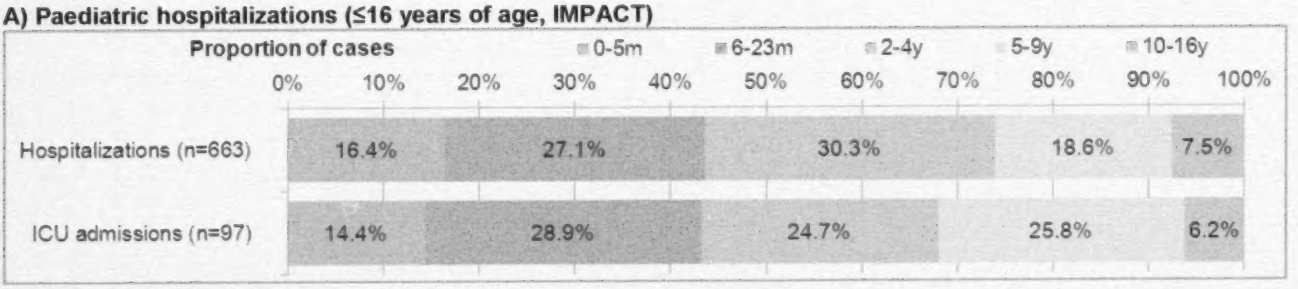
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



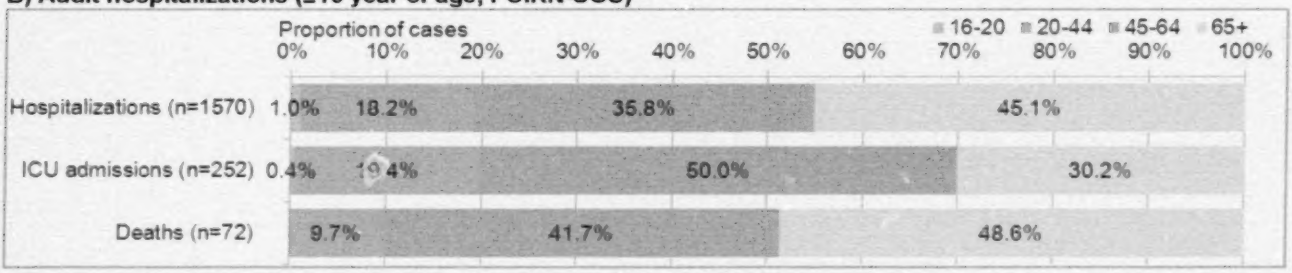
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 15, 121 laboratory-confirmed influenza-associated hospitalizations were reported from seven of the nine participating provinces and territories.* As with other surveillance indicators in week 15, the majority were cases of influenza B (95, 78.5%). Two ICU admissions were reported in week 15: one adult 45-64 years of age and one ≥65 years of age. Three deaths were reported in week 15; one adult 20-44 years of age and two adults ≥65 years of age. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 4,070 influenza-associated hospitalizations have been reported, 85.5% with influenza A. The majority (58.7%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age, and 5-19 years of age, compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 334 ICU admissions have been reported this season, of which 65.0% were adults 20-64 years of age. A total of 226 deaths have been reported. An equal proportion of deaths have been among adults 20-64 years of age and adults ≥65 years of age (each 46%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 14.5% of hospitalizations and 11.5% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 12 Apr. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	599	283	10	306	72	671 (16%)
5-14	131	64	6	61	70	201 (5%)
15-19	35	20	3	12	4	39 (1%)
20-44	595	416	4	175	40	635 (16%)
45-64	1094	691	26	377	112	1206 (30%)
65+	897	459	78	360	285	1182 (29%)
Unknown	129	97	3	29	7	136 (3%)
Total	3480	2030	130	1320	590	4070
Percentage[1]	85.5%	58.3%	3.7%	37.9%	14.5%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Seven new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to April 16, 2014, the WHO has been informed of a total of 421 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 145 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Thirty-one new laboratory-confirmed cases of MERS-CoV, with five deaths, have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 243 laboratory-confirmed cases of infection with MERS-CoV, including 93 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.